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Oskar R. Zaborsky, Ph.D.
Director, Board on Biology
Commission on Life Sciences
National Research Council
National Academy of Sciences
2101 Constitution Avenue, N.W. Room 358
Washington, D.C. 20418

Dear Oskar:

I continue to be concerned about Chapter 3. I will briefly outline my concerns.

1) The chapter has been developed by Eric Lander.

2) The materials developed by Lewontin for U.S. *vs* Yee have been extensively used in the chapter. Many of the points were discredited by prosecution witnesses. It is unfortunate that the materials have developed in this manner.

3) I feel "outrider" protein data has been chosen to exaggerate the points for the "ceiling" approach. I am unwilling to accept the ceiling concept but would prefer that we indicate it as one of several ways to <u>estimate</u> "significance of match". The ceiling approach reduces power of the analysis and favors the defendant unjustifiably. It is my opinion that the match with 3-4 VNTR probes is very significant. Juries should hear the numbers. I asked Ms. Holly Hammond, a forensic scientist in my department, to select 3 individuals at random from our data bases. There was a Black, Caucasian and Hispanic individual. I asked her to assure a 4 probe match and calculate the significance of their RFLPs with 4 probes against their appropriate data base as well as the two remaining data bases and a "ceiling" value from these three data bases. The data is summarized on the 3 sheets appended. The ceiling value is lower for the Caucasian and Black match, and equal in the Hispanic match. Thus, in 2 of 3 analyses using the "ceiling" value significantly lowered the match number.

4) I can not support the large expenditure of Department of Justice or National Institute of Justice funds for the proposed study of VNTR probes. I feel it is not cost justifiable given the limited resources.

5) I fail to see how such studies solve the issues of arriving at a more <u>precise</u> estimate of significance of match. I predict, it will lead to a lower value for significance of match which would be quite artificial.

6) I prefer to see a recommendation on a variety of ways to calculate match significance. All are attempting to estimate significance. If the defendant is a Columbian drug dealer, the points of subpopulations could be discussed by defense in front of a jury, with regard to calculating significance against a U.S. Hispanic data base. If the defendant is a 5th generation U.S. citizen of Italian ancestry, the points of subpopulation matching to a Naples or Milan *vs* U.S. Caucasian data base could be discussed by the defense in front of a jury. I do not subscribe to the use of "ceiling" principle as the <u>only number</u> the jury hears as being correct. It distorts reality of significance of match in favor of the defendant and does not allow the jury to think about a clearly controversial area.

I can not support the ceiling principle since it is proposed on "outrider" examples based on protein polymorphic data, artificially reduces the significance of match, favors the defendant unreasonably, and fails to illustrate to the jury the ambiguity of human population genetics.

Please accept my apology for the tardy reply. I have been on vacation and this section gave me a headache.

Sincerely,

C. Thomas Caskey, M.D., F.A.C.P.
Henry and Emma Meyer Professor
Director, Institute for Molecular Genetics

CTC/emp
xc: Dr. Victor McKusick

PROBE	MOLECULAR WEIGHT BIN#	BAYLOR DATABASE BLACK	CAUC	HISP	CEILING
D1S7	8217	0.096	0.087	0.1	0.1
	6360	0.105	0.123	0.1	0.123
	TOTAL	0.020	0.021	0.02	0.024
D4S139	7802	0.142	0.121	0.192	0.192
	5886	0.094	0.116	0.154	0.154
	TOTAL	0.026	0.028	0.059	0.059
D14S13	3726	0.052	0.025	0.068	0.068
	2510	0.032	0.05	0.057	0.057
	TOTAL	0.003	0.002	0.007	0.007
D16S85	2307	0.035	0.058	0.048	0.058
	763	0.141	0.15	0.103	0.15
	TOTAL	0.009	0.017	0.009	0.017

381 Caucasian

4 PROBE COMBINED

FREQUENCY	2E-08	3E-08	9E-08	2E-07
PROBABILITY	1 :6E+07	1 :4E+07	1 :1E+07	1 :5E+06

1 in 60,000,000 — 60 million

1 in 40,000,000 — 40 million

1 in 10,000,000 — 10 million

1 in 5,000,000 — 5 million

PROBE	MOLECULAR WEIGHT BIN#	BAYLOR DATABASE BLACK	CAUC	HISP	CEILING
D1S7	7873	0.096	0.087	0.1	0.1
	4725	0.053	0.065	0.087	0.087
	TOTAL	0.010	0.011	0.017	0.017
D4S139	9677	0.075	0.101	0.1	0.101
	5419	0.09	0.066	0.131	0.131
	TOTAL	0.013	0.013	0.026	0.026
D14S13	6107	0.039	0.03	0.08	0.08
	1502	0.58	0.144	0.125	0.144
	TOTAL	0.045	0.008	0.02	0.023
D16S85	4029	0.042	0.02	0.034	0.042
	928	0.056	0.065	0.068	0.068
	TOTAL	0.004	0.002	0.004	0.005
4 PROBE COMBINED FREQUENCY		3E-08	3E-09	4E-08	6E-08
PROBABILITY		1 :3E+07	1 :3E+08	1 :2E+07	1 :2E+07 1 :

661 Hispanic

1 in 30,000,000 (30 million)

1 in 300,000,000 (300 million)

1 in 20,000,000 (20 million)

1 in 20,000,000 (20 million)

PROBE	MOLECULAR WEIGHT BIN#	BAYLOR DATABASE BLACK	CAUC	HISP	CEILING
D1S7	7172	0.105	0.058	0.075	0.105
	4301	0.123	0.08	0.138	0.123
	TOTAL	0.025	0.009	0.020	0.025
D4S139	6077	0.094	0.116	0.154	0.154
	2160	0.052	0.015	0.077	0.077
	TOTAL	0.009	0.003	0.023	0.023
D14S13	3077	0.058	0.03	0.091	0.091
	1028	0.123	0.035	0.125	0.125
	TOTAL	0.014	0.002	0.022	0.022
D16S85	2214	0.035	0.058	0.048	0.058
	1261	0.085	0.02	0.048	0.085
	TOTAL	0.005	0.002	0.004	0.009

861 Black

4 PROBE COMBINED

FREQUENCY	2E-08	2E-10	5E-08	1E-07
PROBABILITY	1 :5E+07	1 :6E+09	1 :2E+07	1 :7E+06 1 :

1 in 50,000,000 — 50 million

1 in 6,000,000,000 — 6 Billion

1 in 20,000,000 — 20 million

1 in 7,000,000 — 7 million